

AMENDMENTS TO THE DRAWINGS

Please substitute the attached replacement sheets 1 and 2 for the corresponding originally filed sheets 1 and 2. Applicants attach hereto marked-up copies of sheets 1 and 2 showing amendments made in Figures 3 and 7, respectively.

REMARKS/ARGUMENTS

Claims 1-16 stand rejected in the outstanding Official Action. Claims 1-16 have been amended and newly written claim 19 submitted for consideration. Therefore, claims 1-16 and 19 are the only claims remaining in the application.

The Examiner's acknowledgment of Applicants' claim for foreign priority and receipt of the certified copies of the priority documents is very much appreciated. Additionally, the Examiner's consideration of the prior art previously submitted with Applicants' Information Disclosure Statement is very much appreciated.

In section 1 on page 2 of the outstanding Official Action, the drawings are objected to as allegedly failing to comply with Rule 84 and in particular the identification of element 39 as described in the specification. Applicants have enclosed herewith replacement sheets 1 and 2 and marked-up copies of sheets 1 and 2 illustrating that element 39, the edge of the deformable mirror, has been added in Figures 3 and 7. Applicants also include an additional minor modification of Figure 7, with the identification of element 14. Because Applicants have fully complied with sections 1 and 2 on page 2 of the Official Action, there is believed no further basis for objection to the drawings.

The Examiner objects to claims 6-16 as failing to comply with Rule 75(c). The Examiner appears to object to claim 6, in that it recites a combination of a deformable mirror mount and a deformable mirror as claimed in claim 1. Applicants note that claim 1 initially recited only the mirror and claim 6 recited the combination of a deformable mirror mount in combination with the claim 1 deformable mirror. In effect, Applicants were using the reference to the deformable mirror in claim 1 as a substitute for reciting all of the structure of claim 1 in claim 6.

The above practice is completely appropriate and in compliance with U.S. PTO procedures. The Board of Patent Appeals and Interferences in *Ex parte Porter*, 25 USPQ2d 1144, 1147 (BOPAI 1992) specifically approved of claims “drafted in a short-hand format to avoid rewriting the particulars of the [structure] recited [in a previous claim].” In *Ex parte Porter*, in response to a rejection made by the examiner, the Board specifically held that a claim which “incorporates by reference all of the subject matter of another claim” is “in compliance with the 4th paragraph of 35 USC §112.” *Id.* Thus, the Examiner’s objection to claims 6-16 is not well taken and is respectfully traversed.

However, Applicants have revised the wording of claims 1-16 to recite generically a “mirror structure” where that structure includes a “self-deforming mirror” and a “support structure.” Claim 1 generally recites the mirror structure and the claims dependent thereon add details with respect to a particular combination of structures. Accordingly, the amendments to claims 6-16 as well as claims 1-5 are believed to clearly meet all requirements of Rule 75(c) and any further rejection thereunder is respectfully traversed.

Claim 1 stands rejected under 35 USC §102 as being anticipated by Aldrich (U.S. Patent 4,674,848). The Court of Appeals for the Federal Circuit has noted in the case of *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick*, 221 USPQ 481, 485 (Fed. Cir. 1984) that “[a]nticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim.”

Applicants’ amended claim 1 specifically recites a mirror structure comprising “a self-deforming mirror” and a “support structure.” The Aldrich reference does not disclose a “self-

deforming mirror” and therefore cannot anticipate the subject matter of Applicants’ claim 1.

Accordingly, any further rejection of claim 1 under 35 USC §102 is respectfully traversed.

Claims 1-8, 13, 15 and 16 stand rejected under 35 USC §103 as unpatentable over Aldrich in view of Engel (U.S. Patent 3,923,383). The above comments regarding the Aldrich reference are herein incorporated by reference inasmuch as claim 1 is recited and claims 2-8, 13, 15 and 16 all ultimately depend from claim 1.

The above-noted rejection defect in Aldrich anticipating or rendering obvious the subject matter of claim 1 is not solved by the disclosure in the Engel patent. As noted above, Aldrich fails to disclose a “self-deforming mirror” and there is no indication that the mirror disclosed in Engel is a self-deforming mirror. Further, Applicants’ invention utilizes a support structure for supporting the mirror around the mirror’s periphery wherein input and output ports and at least one coolant channel in the mirror are fluidly connected to inlet and outlet ports in the support structure. Thus, the self-deforming mirror in claim 1 is also a fluid coolable mirror.

While Engel teaches a fluid cooled mirror, it does not teach or suggest inlet or outlet ports on the periphery of a self-deforming mirror. Accordingly, even if Aldrich and Engel were combined, they would not disclose or render obvious the subject matter of claim 1 or claims 2-8, 13, 15 and 16 dependent thereon.

Moreover, the Examiner provides no “reason” or “motivation” for combining the Aldrich and Engel references. Neither reference relates to any problem associated with a self-deforming mirror or the ability to provide coolant to such a mirror. Applicants’ specific problem of mounting the mirror at its periphery and providing coolant input and output ports around the periphery solves the problem of being able to provide coolant to a self-deforming mirror. Since

neither Aldrich nor Engel are self-deforming, they cannot contain any disclosure or suggestion for solving the cooling problems of a self-deforming mirror and therefore there is no reason or motivation for combining these two references.

Finally, each of these references would lead one of ordinary skill in the art away from using Applicants' peripheral mounting system having inlet and outlet ports which are fluidly connected to the mirror substrate inlet and outlet ports. Accordingly, there is no support for any rejection of claims 1-8, 13, 15 and 16 under 35 USC §103 over the Aldrich/Engel combination and any further rejection thereunder is respectfully traversed.

It is also noted that while the Examiner references Engel's use of "vaness" 46, it is noted that these vanes are solid structures and are not "veins" which are channels through which coolant might flow. Indeed, there is clearly no access to any coolant channels at the peripheral edge of the mirror and therefore Engel clearly teaches away from Applicants' claimed combination of elements.

Claims 9-11 and 14 stand rejected under 35 USC §103 as unpatentable over the Aldrich/Engel combination and further in view of Bacich (U.S. Patent 4,733,945). The Examiner's admission that the Aldrich/Engel combination "does not teach a plurality of flexible beams used as a supporting surface and a flexible portion that connects the beam's end to the mounts body" (Official Action, page 8, first paragraph) is very much appreciated. The Examiner cites the Bacich reference as allegedly teaching this structure. However, the Bacich reference does not contain any disclosure of the structures missing from the Aldrich/Engel combination except for a precision lens. The Examiner has identified no structure in Bacich which is even a mirror, let alone a self-deforming mirror, and, as noted, Bacich appears to be a lens (the title of

Bacich is "Precision Lens Mounting"). It appears that the Examiner has simply ignored the limitations of Applicants' independent claim 1 from which claims 9-11 and 14 ultimately depend, where claim 1 defines a mirror structure comprising "a self-deforming mirror" and a "support structure" for the mirror. There is believed to be no mirror disclosed in the Bacich reference and therefore even if Aldrich, Engel and Bacich were combined, they would fail to disclose the subject matter of claim 1 and claims 9-11 and 14 dependent thereon.

Moreover, the Examiner has failed to identify any "reason" or "motivation" for combining these three separate references and indeed has ignored the fact that Bacich teaches away from a mirror by suggesting the use of a lens system. He also appears to ignore the fact that Aldrich and Engel teach away from using a self-deforming mirror or peripheral cooling relating thereto. Accordingly, any further rejection of claims 9-11 and 14 under 35 USC §103 is respectfully traversed.

Claim 12 stands rejected under 35 USC §103 as unpatentable over Aldrich/Engel/Bacich, further in view of LaFiandra (U.S. Patent 6,048,070). Inasmuch as claim 12 depends from claim 9, the above comments regarding the Aldrich/Engel combination by itself and the Aldrich/Engel/Bacich combination are herein incorporated by reference. The Examiner fails to allege that LaFiandra supplies the missing teachings from the Aldrich/Engel combination or the Aldrich/Engel/Bacich combination and therefore, even if combined, would not render obvious the subject matter of claim 12. Additionally, the Examiner has failed to provide any "reason" or "motivation" for combining these four different references. As a result, any further rejection of claim 12 under 35 USC §103 over the Aldrich/Engel/Bacich/LaFiandra combination of references is respectfully traversed.

With respect to claims 13-16 mentioned on pages 10 and 11 of the Official Action, it is not clear whether the Examiner intended these claims to be rejected under the four-reference combination. However, if the Examiner did so intend, Applicants note that these claims all depend ultimately from claim 12 and therefore the above comments with respect to claim 12 and the Aldrich/Engel/Bacich/LaFiandra combination are herein incorporated by reference.

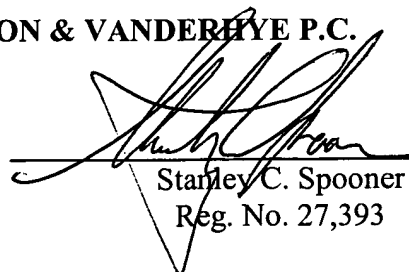
Applicants also submit newly written claim 19 dependent on claim 1 specifying that the support structure of claim 1 is in fact "a flexible support structure" which has ample support in Applicants' specification as originally filed. Entry and consideration of newly written claim 19 is respectfully requested.

Having responded to all objections and rejections set forth in the outstanding Official Action, it is submitted that claims 1-16 and 19 are in condition for allowance and notice to that effect is respectfully solicited. In the event the Examiner is of the opinion that a brief telephone or personal interview will facilitate allowance of one or more of the above claims, he is respectfully requested to contact Applicants' undersigned representative.

Respectfully submitted,

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Fig. 1.

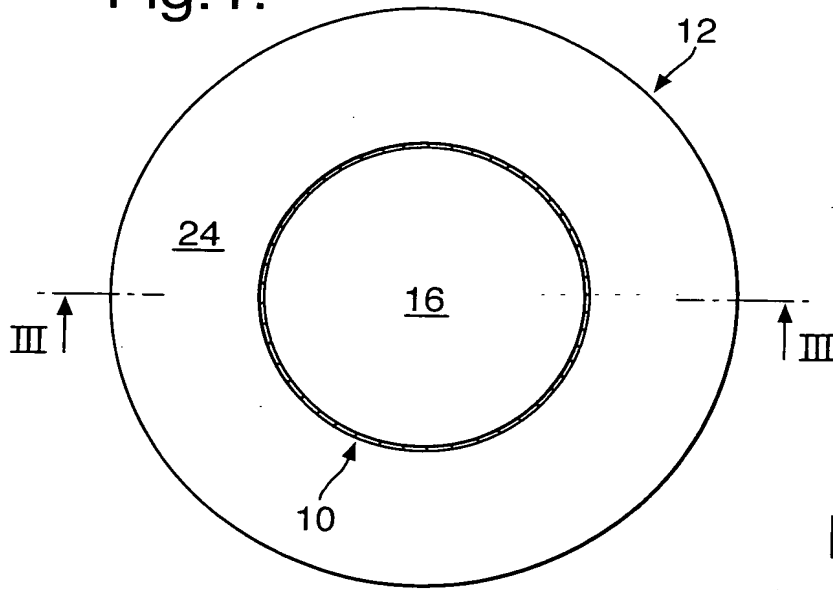


Fig. 2.

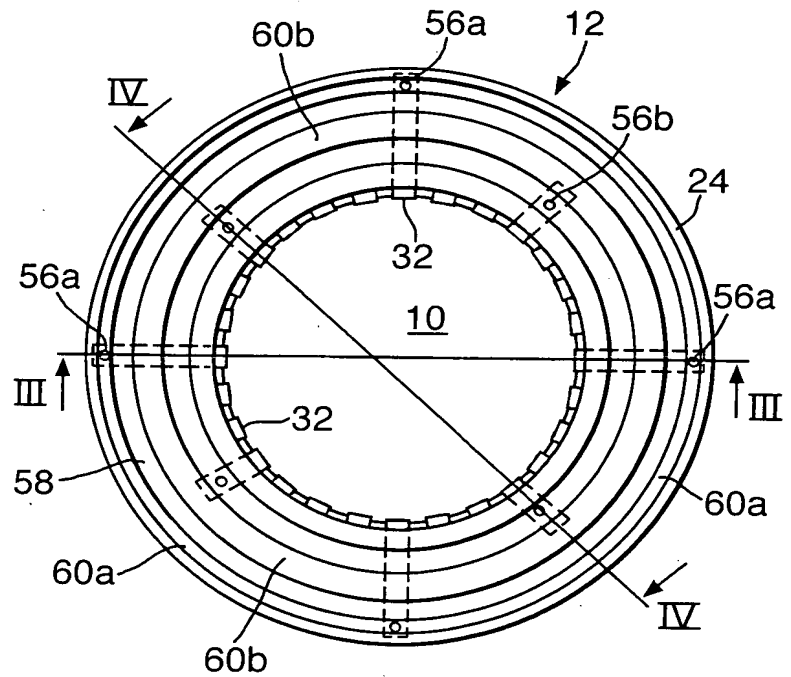


Fig. 3.

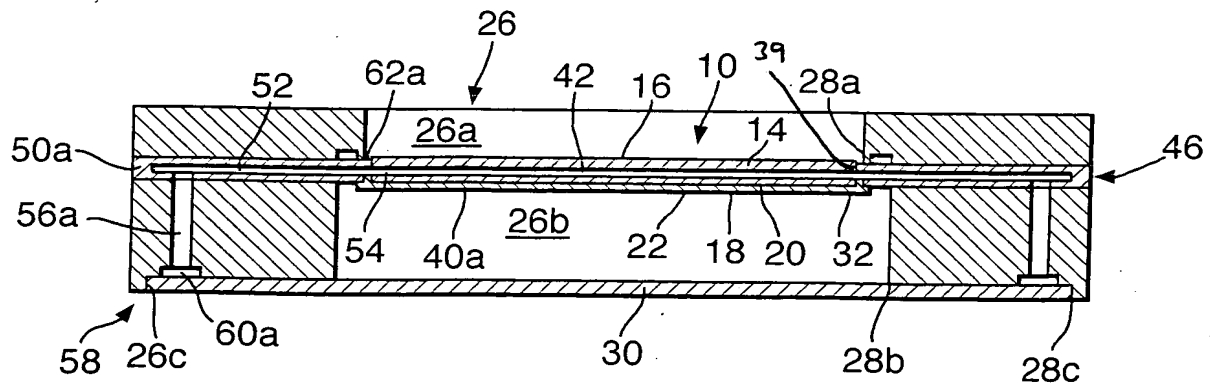




Fig.4.

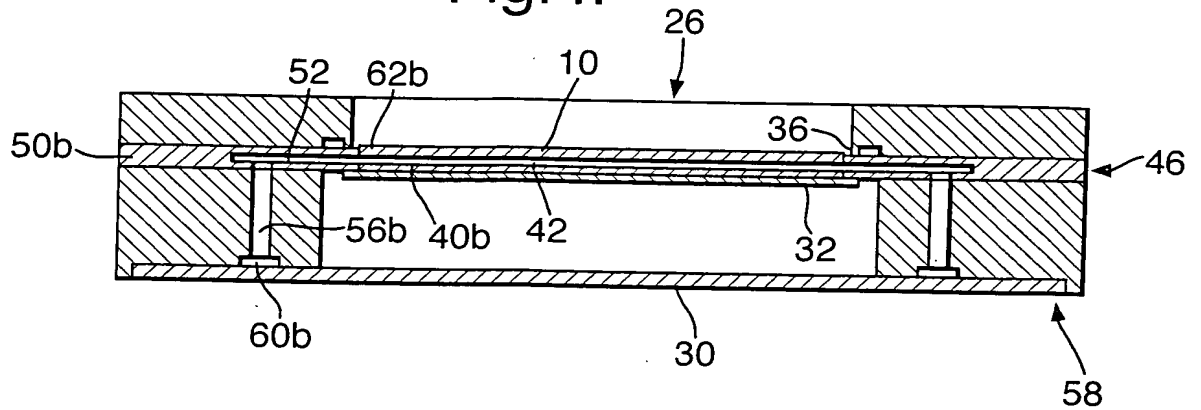


Fig.5.

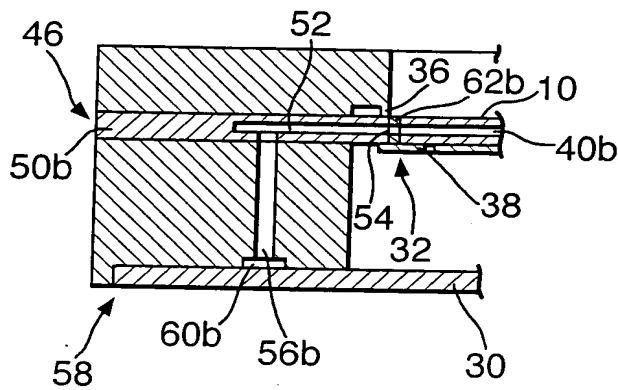


Fig.6.

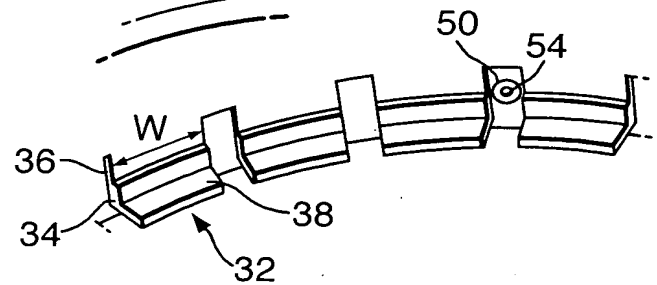


Fig.7.

